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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/830,053

04/23/2004

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EXAMINER

PHAM, HAI CHI

ART UNIT

PAPER NUMBER

2861

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/830,053	Applicant(s) MATSUMOTO, KENJI	
	Examiner Hai C. Pham	Art Unit 2861	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 12 is/are allowed.
- 6) ☒ Claim(s) 1-11, 13-14 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>04/23/04</u> | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Objections

3. Claims 1-13 are objected to because of the following informalities:
 - The following term "apparatuses" found at line 1 of each of the claims 1 through 13 should read --apparatus--.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

5. Claim 14 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- The method claim 14 lacks explicit *method steps* such that one can achieve the goal set forth by the method claim.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-2, 6-7 and 13-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Florence (US 5,825,400).

With regard to claims 1, 6, Florence discloses in Fig. 26 an exposure apparatus comprising a first exposure head (two-dimensional imaging device array 2600) in which a plurality of light emitting sections which emit light with first intensity are arranged in a main scanning direction and in a sub scanning direction (it is noted that Florence's imaging device array comprises either a plurality of light emitting elements (LEDs) or a digital micromirror device (DMD)) (col. 1, lines 17-40) (col. 14, lines 27-65), a second exposure head (two-dimensional imaging device array 2602) in which a plurality of light emitting sections which emit light with second intensity are arranged in the main scanning direction and in the sub scanning direction (again, the imaging device array 2602 comprises a two-dimensionally arranged light emitting elements) in such a way that an exposure area including an overlapped exposure area (overlapped exposure

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area 2622) overlapping an exposure area of the first exposure head is exposed by the second exposure head, and a driving control unit (e.g., imaging device drive circuit 1800, Fig. 18) by which each of the light emitting sections (e.g., pixels or light emitting elements 1804) of the first exposure head and the second exposure head is lit at a predetermined timing (e.g., the activation of the light emitting elements in each of the exposure heads 2600 and 2602 is in synchronization with the rotation of the printer drum 2608) (col. 14, lines 44-51) in such a way that a difference in the maximum exposure amount between pixels adjoining each other in the overlapped exposure area in the main scanning direction is smaller than a difference in the maximum exposure amount between each pixel in the exposure area of the first exposure head and each pixel in the exposure area of the second exposure head (each pixel or light emitting element is driven based on the image data, and wherein the light emitting elements of the first exposure head is lit at a predetermined timing to have the intensity gradually decreased while the light emitting elements of the second exposure head is lit at a predetermined timing to have the intensity gradually increased in the main scanning direction such that the difference in the maximum exposure amount between pixels adjoining each other in the overlapped exposure area in the main scanning direction has the intensity value of "1", e.g., increase or decrease by a unit of intensity value, and is smaller than a difference in the maximum exposure amount between each pixel in the exposure area of the first exposure head and each pixel in the exposure area of the second exposure head, e.g. the difference between the maximum intensity values of the

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same pixel by the two exposure unit being greater than the unit intensity value (see table at the top of col. 11 and col. 11, lines 56-59).

With regard to claims 13, Florence teaches in light emitting sections in the first exposure head, which are disposed correspondingly to the overlapped exposure area, light emitting intensity of the light emitting sections which are used for exposure gradually decreases towards the downstream side in the main scanning direction and towards the downstream side of the sub scanning direction, and in light emitting sections in the second exposure head, which are disposed correspondingly to the overlapped exposure area, light emitting intensity of the light emitting sections which are used for exposure gradually increases towards the downstream side in the main scanning direction (the first imaging device array 260 having its light intensity gradually decreases towards the downstream side in the main scanning direction while the second imaging device array 2602 gradually increases its light intensity towards the upstream side in the main scanning direction, with repeating pattern being formed in the sub-scanning direction) (see table at the top of col. 11).

With regard to claims 2 and 7, Florence further teaches the maximum exposure amount of each pixel in the overlapped exposure area monotonously increase or decrease in the main scanning direction (col. 11, lines 56-59).

The method claim 14 is deemed to be clearly anticipated by the functions of the above structures.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 3 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Florence in view of Inada et al. (US 5,656,526).

Florence discloses all the basic limitations of the claimed invention except for the maximum exposure amount of each pixel in the overlapped exposure area monotonously increase or decrease in the main scanning direction by changing a ratio between the number of light emitting sections which are lit with the first intensity and that of light emitting sections which are lit with the second intensity in a plurality of light emitting sections corresponding to the overlapped exposure area.

Stephenson et al. discloses a method and an apparatus for recording an image with staggered print heads forming an overlapped region in the print line direction, where partially complete segments are formed by the respective print head in the overlapped print region so as to form a uniform spliced region, and wherein the partially complete segments is performed by activating and not activation proper pixels in the respective print heads so as to eliminate error in the mis-alignment between overlapped sub-set images.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the device of Florence by activating and

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deactivating proper pixels of the respective exposure heads in the overlapped print region as taught by Stephenson et al. The motivation for doing so would have been to smoothly blend the sub-set images in the overlapped exposure area.

10. Claims 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Florence in view of Stephenson et al. (US 5,450,099).

Florence discloses all the basic limitations of the claimed invention (please refer to the above paragraph 7 for the rejection), but except for the light emitting sections, which emit light with the first intensity and the light emitting sections which emit light with the second intensity are provided in a predetermined ratio corresponding to the overlapped exposure area.

Stephenson et al. discloses a method and an apparatus for recording an image with staggered print heads forming an overlapped region in the print line direction, where partially complete segments are formed by the respective print head in the overlapped print region so as to form a uniform spliced region, and wherein the partially complete segments is performed by activating and not activation proper pixels in the respective print heads so as to eliminate error in the mis-alignment between overlapped sub-set images.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the device of Florence by activating and deactivating proper pixels of the respective exposure heads in the overlapped print

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region as taught by Stephenson et al. The motivation for doing so would have been to smoothly blend the sub-set images in the overlapped exposure area.

With regard to claim 5, Florence teaches the maximum exposure amount of each pixel in the overlapped exposure area monotonously increase or decrease in the main scanning direction (col. 11, lines 56-59).

10. Claims 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Florence in view of Narita et al. (US 6,184,971).

Florence discloses all the basic limitations of the claimed invention except for the common electrode being provided in such a way that a plurality of light emitting sections which are arranged in a different direction from the sub scanning direction are driven.

Narita et al. discloses an exposure apparatus comprising a two-dimensional array of light emitting elements, which are arranged in the main scanning direction, wherein the common electrode connects all the light emitting elements to ground such that all the light emitting elements arranged in the main scanning direction and thus in a different direction from the sub scanning direction are simultaneously driven.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to set the common electrode for the light emitting element arrays in the device of Florence to ground such that all the light emitting elements arranged in a different direction from the sub scanning direction are simultaneously driven as taught by Narita et al. The motivation for doing so would have been to expose

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the photosensitive material in a plurality of scan lines at a time to enhance the speed of the printing operation.

Allowable Subject Matter

11. Claim 12 is allowed.

12. The following is an examiner's statement of reasons for allowance: the primary reason for the indication of the allowability of claim 12 is the inclusion therein, in combination as currently claimed, of the limitation "wherein in light emitting sections in the first exposure head, which are disposed correspondingly to the overlapped exposure area, *number of the light emitting sections* which are used for exposure *gradually decreases* towards the downstream side in the main scanning direction and towards the downstream side of the sub scanning direction, and in light emitting sections in the second exposure head, which are disposed correspondingly to the overlapped exposure area, *number of the light emitting sections* which are used for exposure *gradually increases* towards the downstream side in the main scanning direction and towards the downstream side of the sub scanning direction", which are not found taught by the prior art of record considered alone or in combination.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

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Pertinent Prior Art

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Ohashi et al. (US 5,107,280) discloses a divisional exposure apparatus comprising a plurality of exposure heads for dividing the exposure regions in the main scanning direction of a photosensitive element, wherein the light intensity of the exposure heads increases or decreases in the overlapped exposure region.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai C. Pham whose telephone number is (571) 272-2260. The examiner can normally be reached on M-F 8:30AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Luu can be reached on (571) 272-7663. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



HAI PHAM
PRIMARY EXAMINER
February 5, 2007